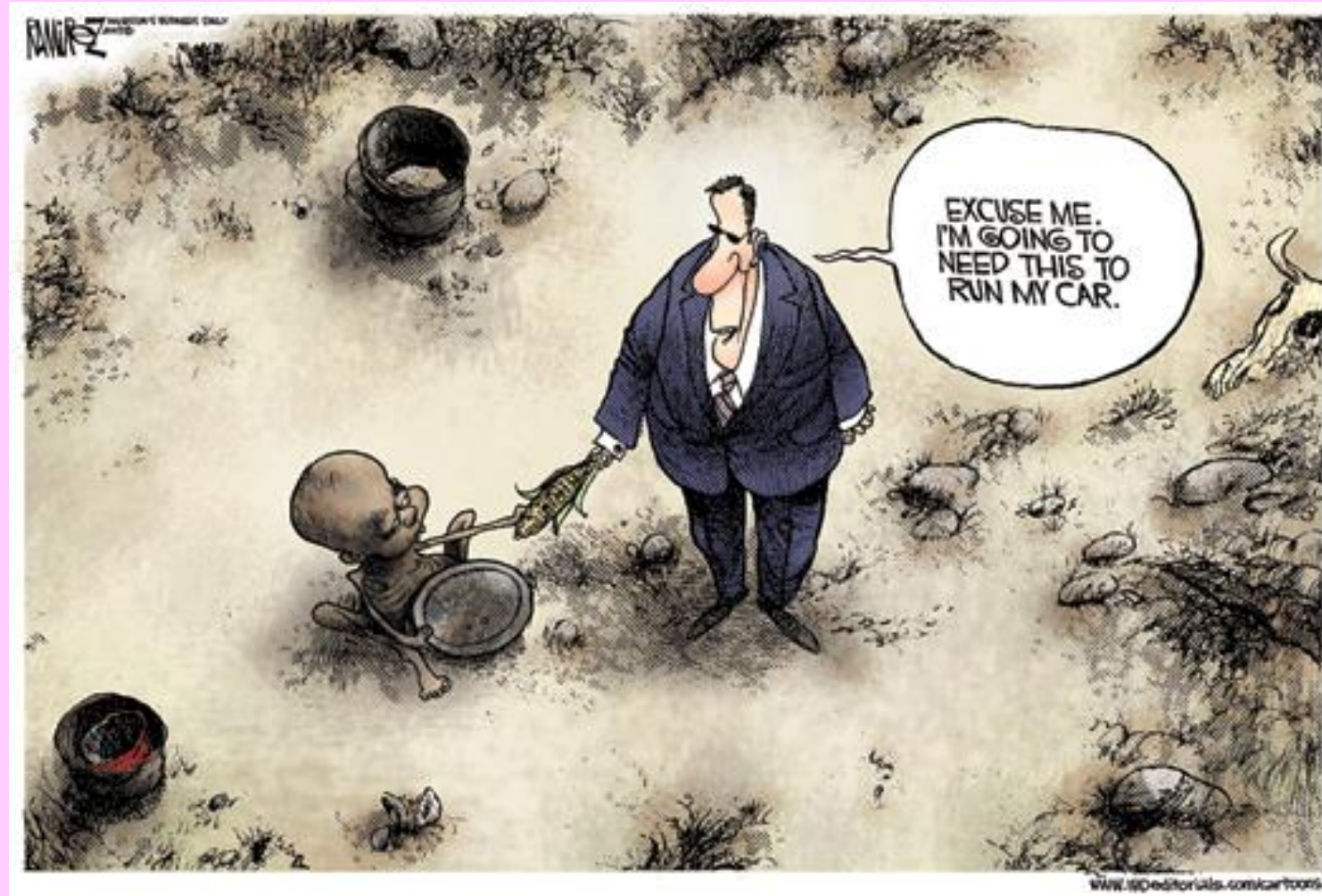
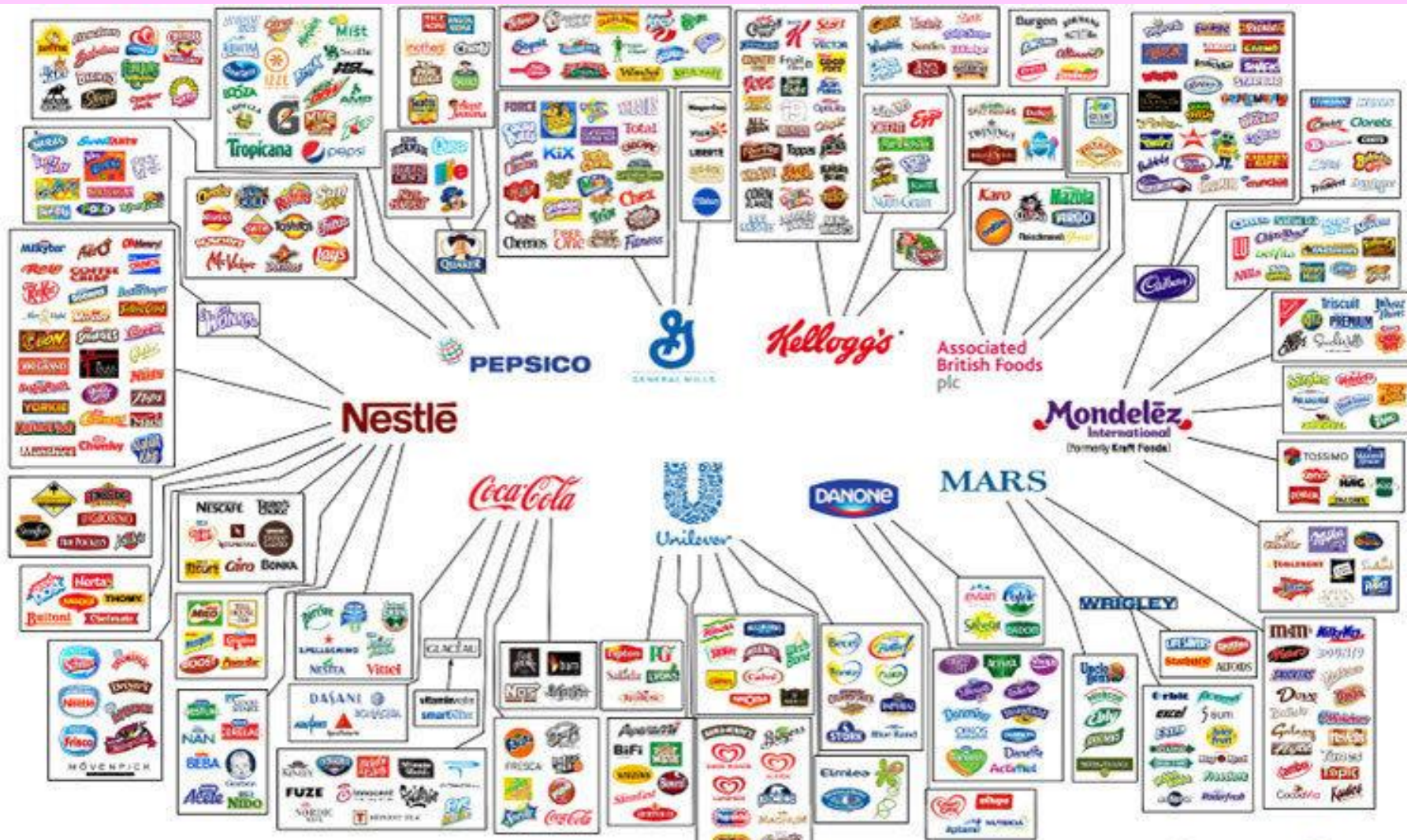


Global Food Crisis



- Malnutrition**—not enough food, quality of food, ability to absorb
- Food Security**- access to enough food to be healthy (2300 calories/ day)
- Subsistence farming**- growing just enough food to survive



Primary Objective of the World Food System?

To feed all of us ~

- As healthily as possible,
- With as little damage to nature as possible,
- In ways that enhance individual and communal life
- and ensure that future generations can feed themselves . . . **sustainable!**

Food issues

- Quantity vs. quality
- Starvation vs. obesity
- Malnutrition vs. nutrition
- Environmental vs. structural scarcity
- Corporate food- profit vs. quality
 - Processed food
 - Agrochemical contamination (Green Rev.)
 - Genetically modified organisms

- Food= Birth control
- More food= more people



History

- “Green Revolution” -Post WWII
 - Fertilizers
 - Pesticides
 - Machinery
 - New seed
 - Irrigation projects

**Huge increase in productivity –
steep environmental costs**

New “Green Revolution” GMO

- Genetically modified organisms
- Promises
 - Less chemicals
 - Greater productivity
 - Greater nutrition

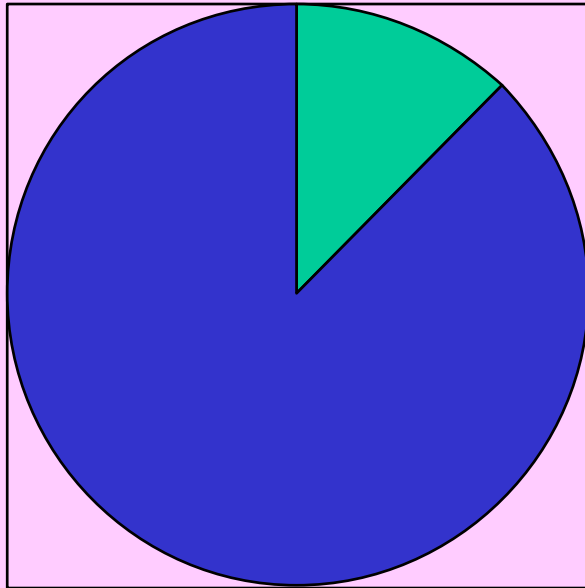
- Costs
 - Unknown impact
 - Monoculture- disease
 - Corporate owned, patented life
 - Terminator seeds
 - Dependence



'STITCHED UP'



Food Situation



■ **Hungry
People**

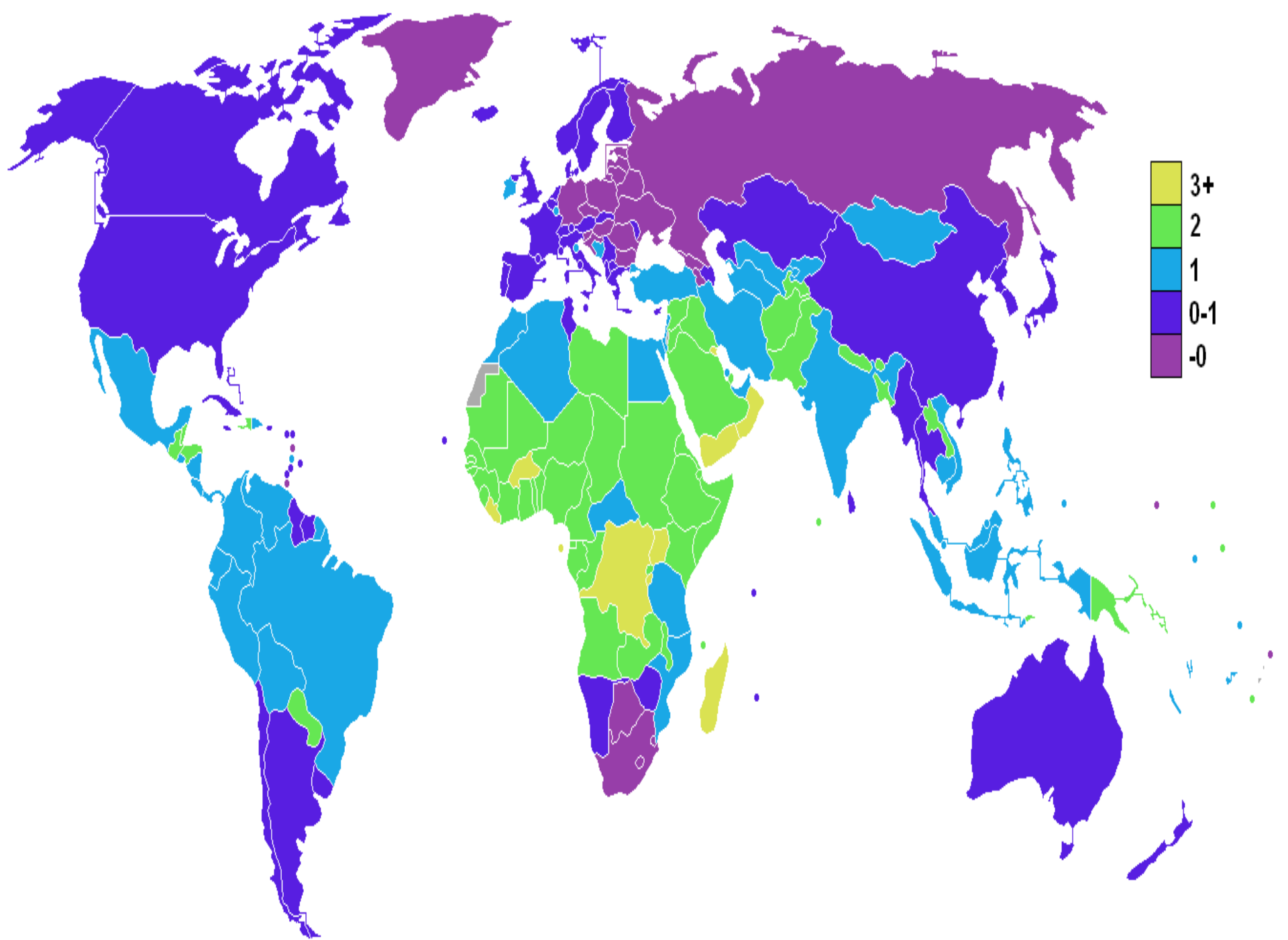
■ **Not
Hungry
or
Overfed**

- World Population = 7 billion
- Hungry People = 954 million*
- World Bank estimates an additional 100 million may go hungry due to food crisis.

***Food Paradox-** 1 billion people are overfed (In U.S.: \$100 billion in diet related health costs)

850 million people were food insecure last year—this current crisis will add 100 million

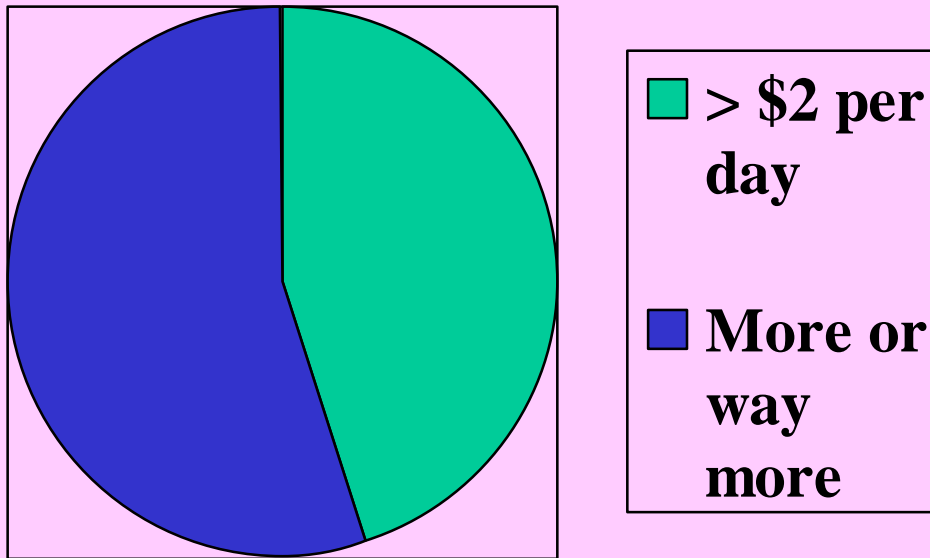




Income disparities

- N. America %5 pop. 24% wealth (global north/south)
 - Northern hemisphere vs southern Hemisphere
- Richest 1% of pop has more \$ than bottom 57%
- Richest 200 people have more than poorest 2.5 BILLION
- U.S. richest 10% earns 30% of wealth, poorest 10% earns 2% of wealth

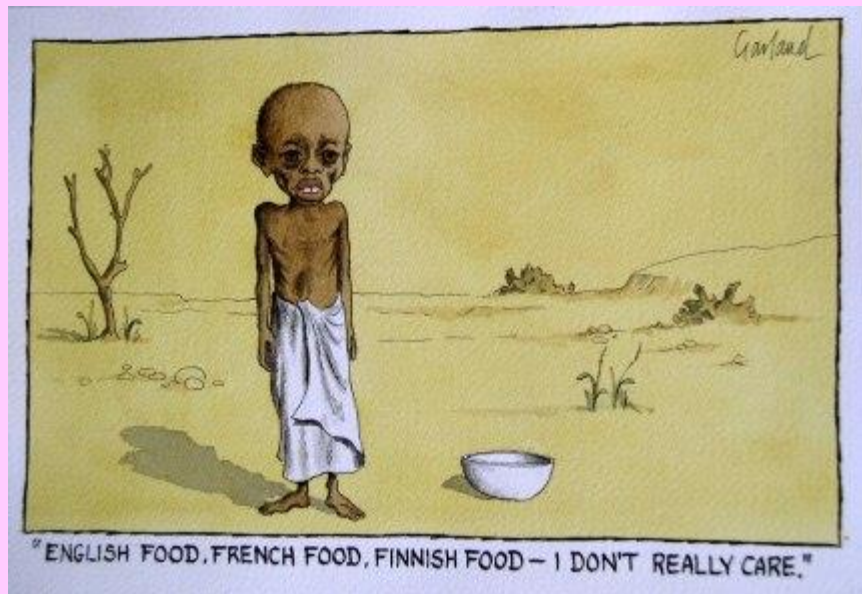
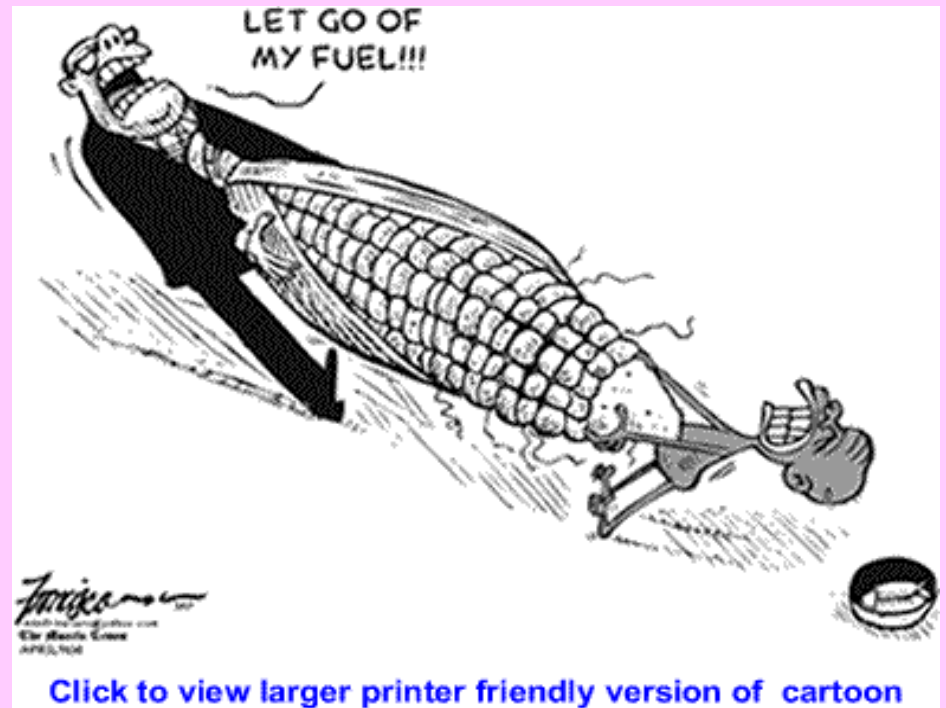
Population living on \$1 or \$2 per day



- Approximately three billion living on less than \$2 per day
- Of those, 1.3 billion people live on \$1 or less per day

\$ spent on food

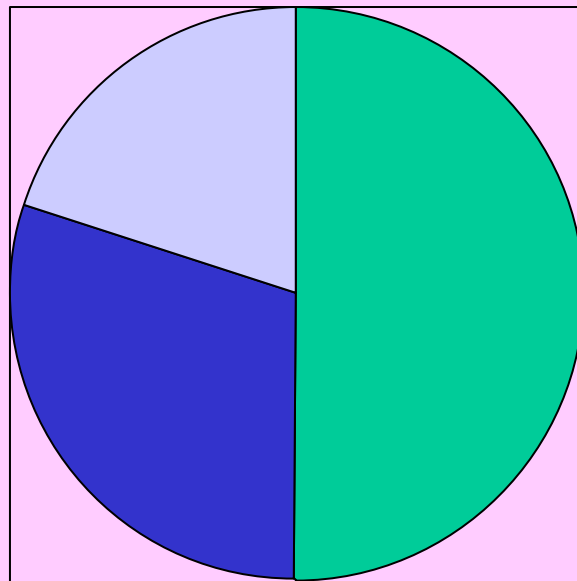
- The 3 billion people living on \$2 or less spend between 50 - 80% on food.
- Food prices have increased by 83% in just three years.
- Food riots in a dozen countries (also called “Rebellion of the Hungry”)



Drivers of rising prices

- Increased demand reduced supply ?
- Historic 1.5% growth in demand for food
 - Now 2% growth in demand; 2.6% growth demand in a decade
 - 50% more food production by 2030
 - 9.2 billion population by 2050

Demand side impact



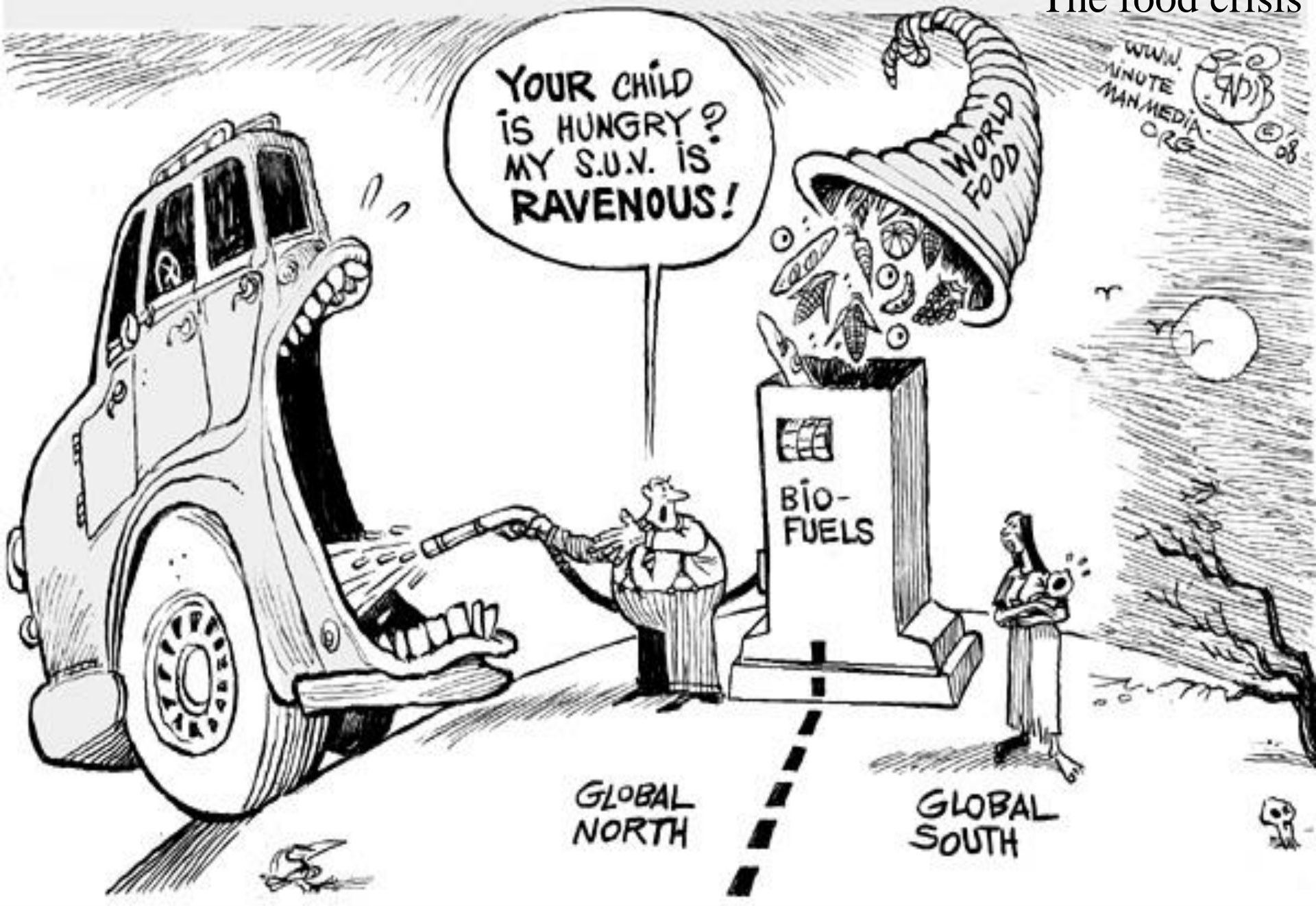
- Income up; diet change**
- Bio / Agrofuels**
- Other**

Structural scarcity

- Rising income growth in emerging economies (notably China and India)
- Diets richer in meat and dairy, which are more grain and water intensive
- **BIOFUELS or AGROFUELS:**
 - U.S. spending \$7 billion a year to encourage ethanol production
 - 20% of corn crop now; 32% by 2016

STAPLE PRICES TRIPLE AS MUCH OF THE WORLD'S FOOD SUPPLY IS DIVERTED TOWARDS FUEL CONSUMPTION

The food crisis



Structural scarcity

- Food is quite inelastic (storage/use)
- Reduced exports, while countries try to import more!
- Speculative (safety in commodities)
- Reserves of grains adds to price volatility

Food- Energy link

1)Energy and agricultural inputs costs rising

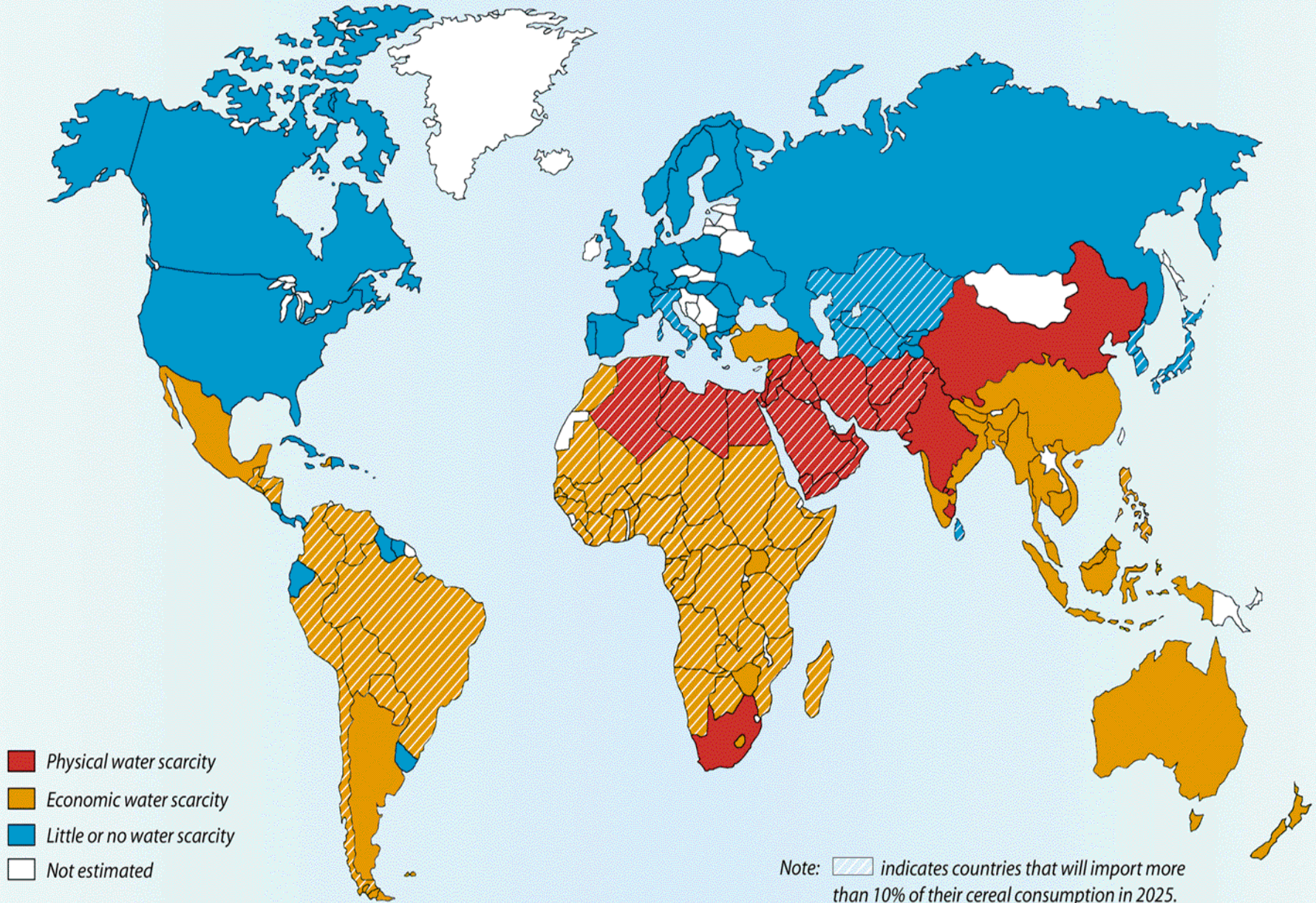
- Direct impact (cultivation, processing, refrigeration, shipping, distribution)
- Indirect impact (producing fertilizers, pesticides, herbicides, fungicides)
- Biofuels

“Environmental Scarcity”

2) Water scarcity

- 500 million live where water is chronically lacking
- Depletion of groundwater (US, Egypt, Pakistan, India and China)

Projected Water Scarcity in 2025

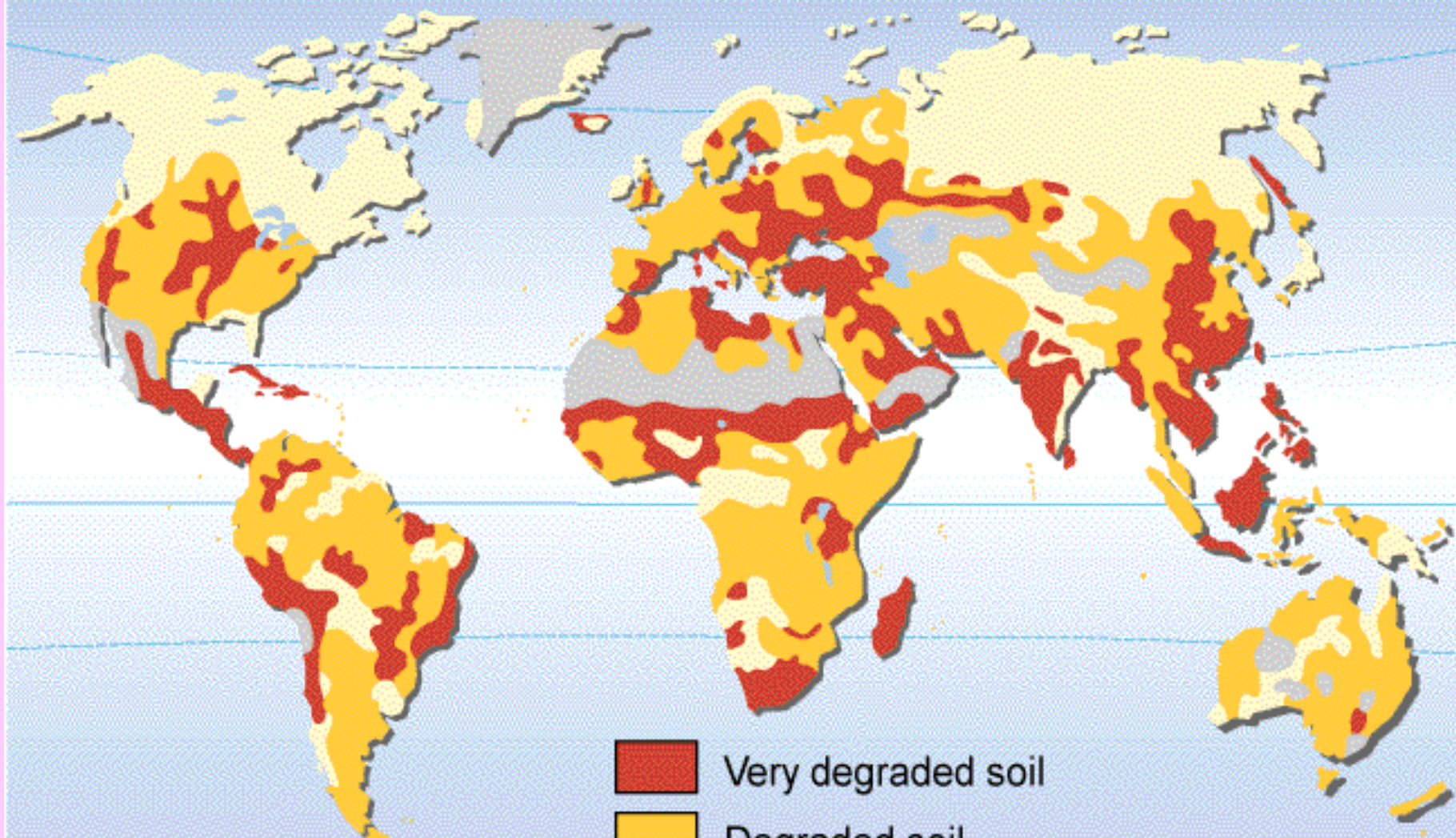






Environmental scarcity

3) Land availability

- Increasing competition for land for food, feed, fiber, fuel, forest conservation, carbon sequestration on top of soil erosion and desertification
- FAO: at most 12% land available; but 16% of arable land is already degraded

Soil degradation



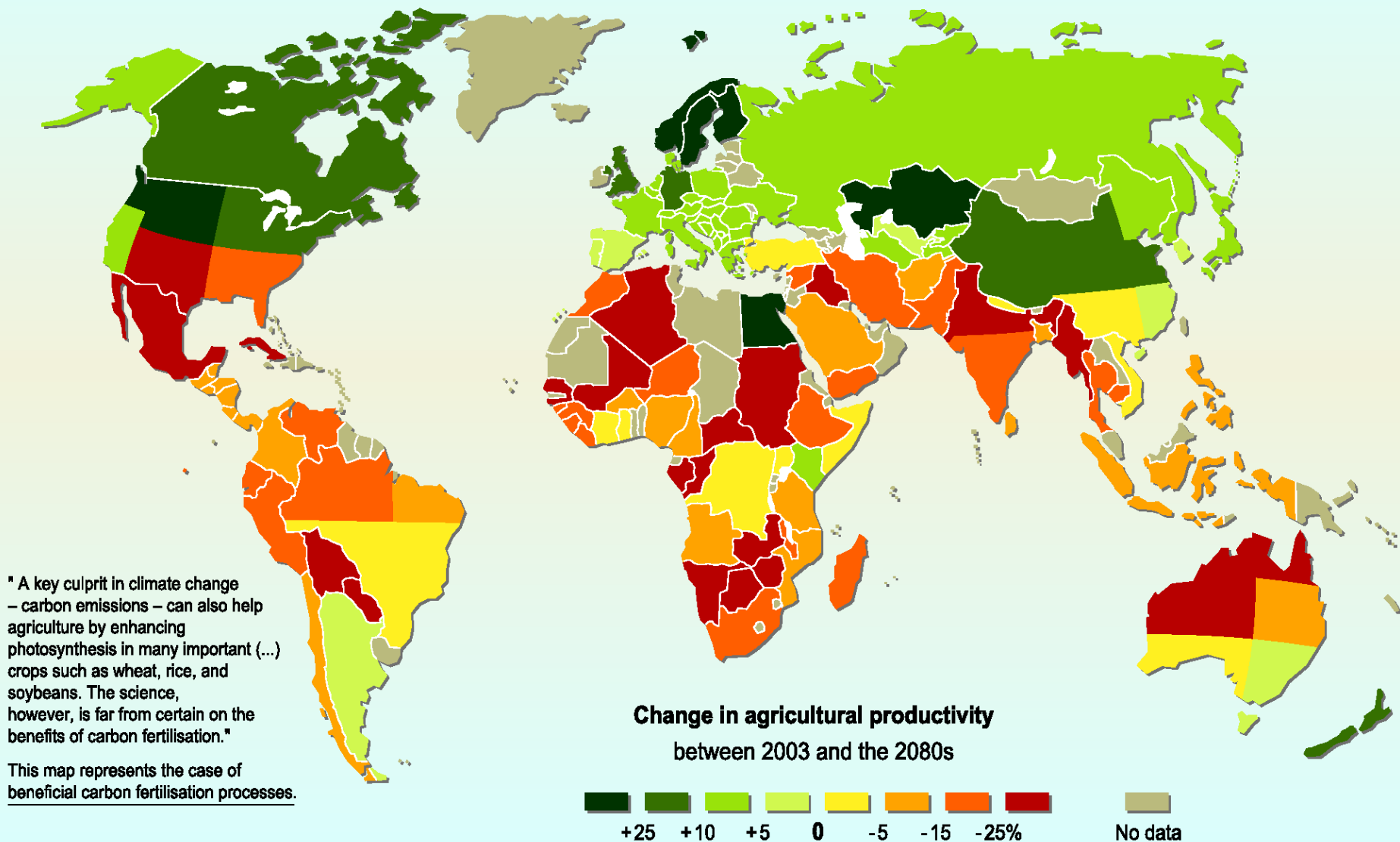
-  Very degraded soil
-  Degraded soil
-  Stable soil
-  Without vegetation

More environmental scarcity

4) Climate Change

- 1-3 degree Celsius rise = possible increase in food production
- More warming and production could decrease
- Impact of extreme weather likely to make biggest difference
- Glacial melting: IPCC estimates many Himalayan glaciers could disappear by 2035
- Catastrophic results for Chinese and Indian agriculture in dry season
- People at risk of hunger – an additional 40-170 million

Projected impact of climate change on agricultural yields



" A key culprit in climate change – carbon emissions – can also help agriculture by enhancing photosynthesis in many important (...) crops such as wheat, rice, and soybeans. The science, however, is far from certain on the benefits of carbon fertilisation."

This map represents the case of beneficial carbon fertilisation processes.

Source: Cline W., 2007, *Global Warming and Agriculture*.

Solutions?

1) Increasing supply

- Short term: Moratorium on bio/agrofuel target policies
- Longer term: Developing countries: organic 80% greater productivity

Solutions?

2) Food sovereignty

- Rebuilding agriculture (within each country and as focus of foreign assistance)
 - Natural systems Agriculture
- Protecting farmers from cheap imports
- Fair price for producers
- Supports for low-income consumers

Solutions?

3) Managing scarcity

- Integrated strategies to manage land, water, energy, food and climate change mitigation and adaptation

Solutions?

3) “Right to Food” - Rethink trade rules

- Redesign trade agreements to protect food security and food sovereignty
- Import substitution—grow foods that are “local”

Local solutions- what you can do

- Know what's in your food and where it comes from- read labels
- Demand GMO labeling
- Eat meals with families and friends w/o electronics
- Buy local- farmers markets
- Buy organic
- Eat in-season
- Get involved with local food drives/ global hunger campaigns

Social unrest

